CLAIMS:

1. A Radio Frequency (RF) transmitter comprising:

an Intermediate Frequency (IF) modulator that receives a modulated baseband signal and that produces a modulated IF signal having a non-constant envelope;

a translational loop that receives the modulated IF signal and that produces a modulated RF signal having a constant envelope;

an envelope time delay adjust block that receives an envelope signal corresponding to the modulated IF signal and that produces a time delayed envelope signal based upon a time delay control signal;

an envelope adjust block that adjusts the modulated RF signal based upon the time delayed envelope signal to produce an envelope adjusted modulated RF signal; and

a time delay calibration block that receives the envelope adjusted modulated RF signal and that produces the time delay control signal.

2. The RF transmitter of claim 1, wherein the time delay calibration block comprises:

a down converter that converts the envelope adjusted modulated RF signal to an baseband signal;

an Analog to Digital Converter (ADC) that samples the baseband signal;

a Low Pass Filter (LPF) that filters the baseband signal to produce a LPF output;

a Band Pass Filter (BPF) that filters the baseband signal to produce a BPF output; and

a level detector and control block that receives the LPF output and the BPF output and

that produces the time delay control signal based upon the LPF output and the BPF output.

3. The RF transmitter of claim 2, wherein the BPF comprises:

a complex mixer; and

a LPF.

4. The RF transmitter of claim 1, wherein the time delay calibration block:

determines a channel power corresponding to the RF signal;

determines an alternate channel power corresponding to an alternate channel or an adjacent channel; and

determines the time delay control signal based upon a ratio of the channel power and the alternate channel power or adjacent channel power.

5. The RF transmitter of claim 1, further comprising an envelope detection block that produces the envelope signal.

6. The RF transmitter of claim 5, wherein the envelope detection block determines the envelope signal based upon the modulated baseband signal.

7. The RF transmitter of claim 5, wherein the envelope detection block determines the envelope signal based upon the modulated IF signal.

8. The RF transmitter of claim 5, wherein the envelope detection block receives the envelope signal from a coupled baseband processor.

9. The RF transmitter of claim 1, wherein:

the envelope signal is a digital signal; and

the time delayed envelope signal is an analog signal.

10. The RF transmitter of claim 9, wherein the envelope time delay adjust block comprises:

a time delay block that delays the digital envelope signal by a delay that is based upon the time delay control signal; and

a digital to analog converter that receives the output of the time delay block and that produces the time delayed envelope signal.

11. A wireless device comprising:

a case;

an antenna coupled to the case;

a baseband processor disposed within the case;

a Radio Frequency (RF) unit disposed within the case, coupled to the baseband processor, coupled to the antenna and having an RF transmitter comprising:

an Intermediate Frequency (IF) modulator that receives a modulated baseband signal and that produces a modulated IF signal having a non-constant envelope;

a translational loop that receives the modulated IF signal and that produces a modulated RF signal having a constant envelope;

an envelope time delay adjust block that receives an envelope signal corresponding to the modulated IF signal and that produces a time delayed envelope signal based upon a time delay control signal;

an envelope adjust block that adjusts the modulated RF signal based upon the time delayed envelope signal to produce an envelope adjusted modulated RF signal; and

a time delay calibration block that receives the envelope adjusted modulated RF signal and that produces the time delay control signal.

12. The wireless device of claim 11, wherein the time delay calibration block comprises:

a down converter that converts the envelope adjusted modulated RF signal to an baseband signal;

an Analog to Digital Converter (ADC) that samples the baseband signal;

a Low Pass Filter (LPF) that filters the baseband signal to produce a LPF output;

a Band Pass Filter (BPF) that filters the baseband signal to produce a BPF output; and

a level detector and control block that receives the LPF output and the BPF output and that produces the time delay control signal based upon the LPF output and the BPF output.

13. The wireless device of claim 11, wherein the time delay calibration block:

determines a channel power corresponding to the RF signal;

determines an alternate channel power corresponding to an alternate channel or an adjacent channel; and

determines the time delay control signal based upon a ratio of the channel power and the alternate channel power.

14. The wireless device of claim 11, further comprising an envelope detection block that produces the envelope signal.

15. The wireless device of claim 14, wherein the envelope detection block determines the envelope signal based upon the modulated baseband signal.

16. The wireless device of claim 14, wherein the envelope detection block determines the envelope signal based upon the modulated IF signal.

17. The wireless device of claim 14, wherein the envelope detection block receives the envelope signal from a coupled baseband processor.

18. The wireless device of claim 11, wherein:

the envelope signal is a digital signal; and

the time delayed envelope signal is an analog signal.

19. The wireless device of claim 18, wherein the envelope time delay adjust block comprises:

a time delay block that delays the digital envelope signal by a delay that is based upon the time delay control signal; and

a digital to analog converter that receives the output of the time delay block and that produces the time delayed envelope signal.

20. A method for producing a modulated RF signal having a non-constant envelope, the method comprising:

receiving a modulated baseband signal;

converting the modulated baseband signal to a modulated IF signal having a non-constant envelope;

converting the modulated IF signal to a modulated RF signal having a constant envelope using a translational loop;

receiving an envelope signal corresponding to the modulated IF signal;

producing a time delayed envelope signal based upon a time delay control signal;

adjusting the modulated RF signal based upon the time delayed envelope signal to produce an envelope adjusted modulated RF signal that has a non-constant envelope; and

producing the time delay control signal based upon the envelope adjusted modulated RF signal.

21. The method of claim 20, wherein producing the time delay control signal based upon the envelope adjusted modulated RF signal comprises:

converting the envelope adjusted modulated RF signal to an envelope adjusted modulated baseband signal;

low pass filtering the envelope adjusted modulated baseband signal to produce a low pass filtered output;

band pass filtering the envelope adjusted modulated baseband signal to produce a band pass filtered output; and

determining the time delay control signal based upon the ratio of the band pass filtered output to the low pass filtered output.

22. The method of claim 20, wherein producing the time delay control signal based upon the envelope adjusted modulated RF signal comprises:

determining a channel power corresponding to the RF signal;

determining an alternate channel power corresponding to an alternate channel or an adjacent channel; and

determining the time delay control signal based upon a ratio of the channel power and the alternate channel power.

23. The method of claim 20, further comprising determining the envelope signal based upon the baseband signal.

24. The method of claim 20, further comprising determining the envelope signal based upon the modulated IF signal.

25. The method of claim 20, further comprising receiving the envelope signal from a coupled baseband processor.